THE SPECIES OF DINEUTES OF AMERICA NORTH OF MEXICO.

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The similarity in general appearance of the species of this genus, together with the apparent lack of definite characters for their separation, has not made them favorites with collectors or students. Dr. LeConte monographed the species of the United States, in 1868, in the "Proceedings of the Academy of Natural Sciences of Philadelphia," and described two new ones, *serrulatus* and *carolinus*. In 1878, in the "Proc. Amer. Philos. Society," he described *angustus*. In the "Annals of the Entomological Society of France," 1882 and 1883, Dr. H. Regimbart monographed the species of the world, added one new species, *analis*, to our fauna and suppressed *carolinus* and *angustus* after examining Dr. LeConte's types.

The examination and study of a large series of specimens from all parts of the United has enabled me to recognize all the previously accepted species, and to discover three undescribed. I am also convinced, contrary to Dr. Regimbart's conclusions, that *carolinus* and *angustus* are good species, and I hope by means of the table, descriptions and plates, to make all the species readily recognizable to the student and general collector.

The species are all of fair size, some quite large; all are more or less oval and convex. The upper surface is usually shining and bronzed, and is finely reticulate in all except *sublineatus*, where it is more nearly granulate. The shape of the apices of the elytra and the structure of the anterior tibiæ and femora are the more important characters used to separate the species, but color of the upper and under surface, the distinctness of the striæ and the depressions of the elytra are also of use. The male genitalia afford excellent characters, and the different forms are shown on the plate, but I have not made use of them in the descriptions as the examination of them requires a partial dissection of the specimens. There is a difference in the depth of the thorax, as compared with its width, in some species, but the character does not seem to be of much value. A careful examination of the under surface of the abdomen has failed to show any secondary sexual characters in either male or female, except in the case of *sublineatus*, which species also shows the peculiar surface sculpture above mentioned. In the female of that species the penultimate abdominal segment is strongly sinuate, giving it the appearance of being lobed at the middle, but the male shows no corresponding character.

The femora of the males in all the species, except *vittatus*, *hornii*, *nigrior* and *assimilis*, are furnished with a more or less distinct tooth, and on the upper surface of the femora of all, male or female, will be found a row of setigerous punctures varying in number and character. A certain amount of discretion is necessary in counting these punctures, as a puncture is occasionally misplaced or entirely lost. When one is missing a corresponding blank space is found, and when there is an extra one it is crowded in close to another, placed entirely out of line or in the hollow of the leg near its base, thus breaking the regularity of the punctuation. The number, taken together with their character, is of value in determining the species.

The depressions in the elytra are situated, one at the exterior apical angle, and the other at the suture near the apex. When the latter is deep the elytra have the appearance of being elevated or humped at that point. In the descriptions the characters of the male are used unless special mention is made of the female, and as a rule the female structure follows closely that of the male; the legs are, however, more slender, and in those species which have the tibiæ subsinuate in shape the broadening is on the outer instead of the inner side; the femora usually have one more puncture.

Four types of anterior tibiæ are represented: first, the truly sinuate, exemplified in *vittatus* and *sublineatus;* second, the subsinuate—cylindrical at basal third, then rather suddenly broadened and continuing nearly parallel to apex—*emarginatus*, *carolinus*, *productus*, *serrulatus* and *analis;* third, the wedge-shaped—rather flat and gradually broadened from base to apex—*hornii*, *nigrior* and *assimilis*; fourth, the club-shaped, somewhat cylindrical at base, not flat, and thence gradually broadened to apex—*discolor* and *angustus*.

The elytra have nine slightly impressed striæ, which are sometimes almost obliterated. The labrum is rounded in front and ciliated, the scutellum is invisible, and the mesosternum is coarsely, but sparsely punctured in front. In the males the anterior tarsi are moderately dilated, and densely clothed beneath with papillæ.

A proper mounting of the specimens is of importance. The anterior legs should be spread out and depressed far enough to allow of an examination of the upper surface of the femora. The abdomen should be depressed, and care used to see that the elytra are in a natural position; otherwise the serration of the apices may escape notice, and one may be deceived as to whether they are dehiscent at suture or not.

In the measurements that portion of the abdomen extending beyond the elytra is not included, and localities mentioned are those from which I have seen examples.

I wish here to express my deep obligations to Dr. C. V. Riley, through whom were placed in my hands, for examination and study, the large collections of the U. S. National Museum; to Dr. George H. Horn, for advice and the loan of his material; to Wm. Beutenmüller, for a fine series of *serrulatus;* and especially to Prof. John B. Smith, for advice and friendly criticism, and to whose facile pencil the reader is indebted for the plates illustrating this paper.

Were it not for one, *hornii*, the species would divide very naturally into two groups: those with the sutural angles of the elytra rounded, and those with the angles evident and usually produced. In the first section would be placed *vittatus*, *sublineatus*, *emarginatus* and *carolinus*, and in the second all the others. In *hornii* we have a species with the male going into the first, and the female into the second group. Being unable to devise a better arrangement an independent group has been found for the odd species.

The species may be grouped and tabulated as follows:

Sutural angles of elytra rounded in both sexes....................Group A.
Sutural angles of elytra rounded in ♂, produced and strongly dehiscent in ♀. Group B.
Sutural angles of elytra distinct, frequently produced, in both sexes..Group C.

Group A.

Femora of ♂ not toothed.
  Size large; surface very shining: elytra with a bronze vitta......**vittatus.**
Femora of ♂ toothed.
  Size large; opaque, color dark olive: tooth prominent, oblique. **sublineatus.**
  Size medium to small; surface black, frequently bronzed.
    Tooth strong, acute; sutural angles broadly rounded, apices not serrate. **emarginatus.**
    Tooth weak; sutural angles scarcely rounded, apices finely serrulate. **carolinus.**

Group B.

- Femora of ♂ not toothed.
  - Size medium; surface black, not polished, sometimes bronzed.
    - Anterior tibiæ gradually broadened from base to apex, tip oblique, exterior angles obtuse. . . . . **hornii.**

Group C.

- Under surface black, shining, usually bronzed.
  - Femora of ♂ not toothed.
    - Size medium, form robust; apices strongly depressed, not dehiscent at suture.
      - Anterior tibiæ regularly broadened from base to apex, exterior angle acute, produced. . . . . **nigrior.**
    - Size medium, form more slender; apices not strongly depressed, dehiscent at suture.
      - Anterior tibiæ regularly broadened from base to apex, exterior angle rectangular. . . . . **assimilis.**
  - Femora of ♂ toothed.
    - Size small; apices dehiscent at suture, sutural angles evident, produced.
      - Anterior tibiæ cylindrical at basal third, then rather suddenly broadened and continuing nearly parallel to apex, exterior angle acute, produced. **productus.**
- Under surface brown or testaceous; femora of ♂ toothed.
  - Apices of elytra serrulate.
    - Size medium to small; surface very highly polished, not bronzed, strongly narrowed in front; under surface chestnut-brown, serration distinct. **serrulatus.**
    - Size medium; surface not highly polished, bronzed, moderately narrowed in front; under surface pitchy-brown, serration fine. . . . . **analis.**
  - Apices of elytra not serrulate.
    - Size moderately large; broad, narrowed in front, surface metallic shining; under surface and legs testaceous to straw color. . . . . **discolor.**
    - Size small; narrow, very convex, surface polished black; under surface and legs rufous. . . . . **angustus.**

Group A.

D. vittatus Aubé. Plates v, vi, figs. 1, 1*a* and 1*b*.—Size large, regularly oval, feebly convex; surface black, very shining, obsoletely punctate, striæ faint, more evident at sides; a submarginal bronze vitta extends across the thorax and nearly to apex of the elytra; lateral margins of elytra not sinuate, depressions not deep, sutural angles broadly rounded; under surface dark brown or pitchy, middle and posterior tibiæ and tarsi paler; anterior tibiæ sinuate, apex truncate, or very slightly oblique, exterior apical angle rectangular; femora without tooth, punctures (six ♂, seven ♀) not deep or closely placed. Length 12–15.5 mm.; breadth 8–10 mm.

Hab.—North, Middle and South Atlantic States, Indian Territory, Mexico (one specimen U. S. Nat. Mus.).

Readily recognized on account of its large size, very shining appearance and the bronze vitta.

D. sublineatus Chev. Pls. 5 6, figs. 2. 2*a* and 2*b*.—Size large, oval, rather strongly convex; surface opaque, finely granulate, color dark olive, punctures scarcely visible, striæ well defined; lateral margins of elytra feebly sinuate, depressions scarcely evident in ♂, slightly more so in ♀, apices truncate, of ♀ slightly sinuate, sutural angles feebly rounded; under surface black, middle and posterior legs pitchy brown; anterior tibiæ strongly sinuate, apex oblique, exterior apical angle obtuse; femora of male with a sharp, somewhat oblique tooth, setigerous punctures (9 ♂, 10 ♀) deep and rather closely placed. Length 14 15 mm.; breadth 8–9 mm.

Hab.—Arizona, southward to Nicaragua.

On account of its peculiar color and large size this species will be readily recognized. As mentioned in the introduction, this species has a peculiar secondary sexual character in the female. The penultimate segment of the abdomen is quite strongly sinuate, giving it a lobed appearance, and the ultimate segment has an evident impression at tip.

D. emarginatus Say. Pls. 5, 6, figs. 3, 3*a* and 3*b*.—Size moderate, rather broadly oval, moderately convex; surface black, not very shining, somewhat bronzed, punctures and striæ faint; lateral margins of elytra in ♂ not, in ♀ slightly sinuate at exterior apical angles, depressions not deep, sutural angles broadly rounded; under surface black, very shining and slightly bronzed; middle and posterior legs, tip of ultimate and sides of abdominal segments testaceous; anterior tibiæ cylindrical at basal third, then rather suddenly broadened on inner margin in ♂, on outer margin in ♀, and continued nearly parallel to apex; apex truncate, exterior apical angle rectangular; femora with a distinct, sharp tooth, punctures (7 ♂, 8 ♀) rather deep, not closely placed. Length 10 11 mm.; breadth 6–7 mm.

Hab.—North and Middle Atlantic States; Virginia.

The figure on the plate illustrates an irregular punctuation.

D. carolinus Lec. Pls. 5, 6, figs. 4, 4*a* and 4*b*.—Size small, rather narrowly ovate, moderately convex; surface black, sometimes bronzed, not very shining, punctures and striæ faint; lateral margins of elytra not sinuate in ♂, in ♀ moderately sinuate, impressions scarcely evident, the flattening of the margins extending nearly or quite to the suture, sutural angles feebly rounded, apices finely serrulate; under surface black, shining, somewhat bronzed, middle and posterior tibiæ and tarsi dark testaceous; femora brown; anterior tibiæ cylindrical at basal third, then rather suddenly broadened on inner margin in ♂, on outer margin in ♀, and continued nearly parallel to apex; apex truncate, exterior apical angle acute; femora with a small tooth, frequently scarcely more than an abrupt termination of the ridge on underside, setigerous punctures (7 ♂, 8 ♀) not deep, rather closely placed. Length 9-10 mm.; breadth 5.5 6 mm.

Hab.—South Atlantic States; Louisiana, Texas.

I cannot agree with Dr. Regimbart and others that this species and *emarginatus* are identical. While I cannot recognize the apices of the elytra, as reflexed, as described by Dr. LeConte, the flattening of the margin continuing to the suture gives them that appearance to a certain degree.

In *emarginatus* the femoral tooth is distinct and strong; in *carolinus* weak, often feeble; sutural angles in *emarginatus* rather broadly rounded; in *carolinus* feebly so; apices of elytra in *emarginatus* smooth; in *carolinus* finely serrulate. This serration is very fine, and to see it requires care, a proper position of the specimen, and that it be *clean*. An examination of a hundred or more specimens found the character constant; *carolinus* is smaller and less broadly oval, and the male genitalia are quite unlike.

Group B.

D. hornii n. sp. Pls. 5, 6, figs. 5, *5a* and *5b*.—Size moderate, elongate oval, not strongly convex; surface black, not polished, somewhat shining or bronzed, frequently opaque, striæ and punctures feebly marked, more evident in opaque specimens: lateral margins of elytra in ♂ not sinuate, in ♀ strongly sinuate at exterior apical angles, depressions evident, stronger in ♀; sutural angles in ♂ rounded, in ♀ produced, and with the suture strongly dehiscent; under surface dark brown, shining, slightly bronzed; legs dark testaceous; anterior tibiæ regularly widening from base to apex; apex oblique, exterior apical angle obtuse, but not rounded; femora without tooth, punctures (6 ♂, 7 ♀) not deep or closely placed. Length 10–11 mm.; breadth 5.5–6 mm.

Hab.—North and Middle Atlantic States; Texas. Described from four males and four females.

This species has been mixed with *assimilis*, but the rounded sutural angles of the elytra will readily separate the male. The female is not so easily pleased, but the *strongly* dehiscent apices of the elytra and obtuse angulation of the tibiæ with care will determine it.

I take pleasure in naming this species after Dr. G. H. Horn, as a slight recognition of many favors and kindly interest.

Group C.

D. nigrior n. sp. Pls. 5, 6, figs. 6, *6a* and *6b*.—Size moderate, regularly oval, rather convex; surface black, shining, slightly bronzed; striæ and punctures evident; lateral margins of elytra in ♂ slightly sinuate at exterior apical angles, sinuate at apex, sutural angles evident, produced; in ♀ lateral and apical margins strongly sinuate, sutural angles strongly produced; depressions deep, apices strongly depressed, not dehiscent at suture; under surface black, shining, middle and posterior tibiæ and tarsi brownish yellow; femora brown; anterior tibiæ regularly widening from base to apex; apex truncate, exterior apical angle acute, evidently produced; femora without tooth, punctures (9 ♂, 10 ♀) deep and closely placed. Length 10–12 mm.; breadth 6–7 mm.

Hab.—North and Middle Atlantic States; Virginia. Described from four males and four females.

Resembles rather closely *hornii* and *assimilis* in its general appearance, but is larger and proportionately broader than either. It may be separated from the former by the produced exterior apical angles of the anterior tibiæ. It differs also in this respect from *assimilis*, and the apices of elytra are strongly depressed and not dehiscent at suture as in that species.

D. assimilis Aubé. Pls. 5, 6, figs. 7, 7 *dis.*, 7*a* and 7*b*.—Size moderate, oblong oval, distinctly convex; surface black, strongly bronzed, not deeply punctured; striæ usually feebly marked; lateral margins of elytra in ♂ not sinuate, apices feebly sinuate, slightly dehiscent at suture and not strongly depressed, sutural angles feebly produced; in ♀ the lateral margins of the elytra and apices more strongly sinuate and dehiscent at suture, sutural angles produced; under surface black, more or less tinged with brown, very shining, middle and posterior legs testaceous; anterior tibiæ regularly widening from base to apex; apex truncate, exterior apical angle rectangular, scarcely or not at all produced; femora without tooth, punctures (7 ♂, 8 ♀) shallow and not closely placed. Length 10-11 mm.; breadth 5.5-6 mm.

Hab.—North, Middle and South Atlantic States; New Mexico, Colorado, Minnesota, Michigan and Dakota.

As remarked under those species, *hornii* and *nigrior* have been mixed with *assimilis;* their more evident differences may be summarized as follows: *Anterior tibiæ:* in *hornii* with apex oblique, exterior angle obtuse; *nigrior* apex truncate, exterior angle acute and evidently produced; *assimilis* apex truncate, exterior angle rectangular and *scarcely* or not at all produced. *Sutural angles:* in *hornii* ♂ rounded, ♀ produced, and with the suture *strongly* dehiscent; in *nigrior* ♂ and ♀ produced, apices depressed and *not* dehiscent at suture; in *assimilis* ♂ and ♀ produced, apices *feebly* dehiscent at suture. *Setigerous femoral punctures:* in *hornii* few (6 ♂, 7 ♀), not deep or closely placed; in *nigrior* numerous (9 ♂, 10 ♀), deep and closely placed; in *assimilis* moderate (7 ♂, 8 ♀), shallow and not closely placed. The male genitalia are entirely unlike, as shown by the figures on the plate.

D. productus n. sp. Pls. 5, 6, figs. 8, 8*a* and 8*b*.—Size small, ovate, not very convex; surface shining, striæ faint, punctures quite evident; ♂ lateral margins of elytra not sinuate, apices slightly sinuate and dehiscent at suture, depressions not strongly marked, sutural angles produced; ♀ lateral and apical strongly and irregularly sinuate, more dehiscent at suture, depressions deeper and sutural angles more sharply produced; under surface black, strongly bronzed and shining, middle and posterior tibiæ and tarsi and last abdominal segment rufous; anterior tibiæ cylindrical at basal third, then rather suddenly broadened on inner margin in ♂, on outer in ♀, and continuing nearly parallel to apex; apex truncate, exterior angle acute, produced; femora with a small, sharp tooth, the punctures (6 ♂, 7 ♀) being rather large and deep. Length 9.5—10 mm.; breadth 5.5-6 mm.

Hab.—Texas. Described from two males and two females.

Resembling closely *carolinus*, but quite distinct on account of the sutural angles of the elytra being evidently produced, and the differences in the male genitalia.

D. serrulatus Lec. Pls. 5, 6, figs. 9, 9*a* and 9*b*.—Size moderate to small, very convex, strongly narrowed in front; surface polished black with purplish reflection, shining, not bronzed, punctures and striæ obliterated; lateral margins of elytra slightly sinuate at exterior apical angles, apices truncate, sutural angles evident, depressions moderate, apices distinctly serrate; under surface chestnut-brown, shining; anterior tibiæ cylindrical at basal third, then rather suddenly broadened on inner margin in ♂, on outer in ♀, and continuing nearly parallel to apex; apex truncate; exterior angle obtuse, rounded; femora with a distinct, acute tooth, punctures (9 ♂, 10 ♀) moderately deep and closely placed. Length 9-12 mm.; breadth 5-7 mm.

Hab.—All the specimens I have seen, about one hundred, are from Florida.

A very distinct species and readily recognized. While the variation in size is great, it keeps remarkably true to form.

D. analis Reg. Pls. 5, 6, figs. 10, 10*a* and 10*b*.—Size moderate, broadly oval, narrowed in front; surface shining, not strongly bronzed, striæ faint; ♂ lateral margins of the elytra slightly sinuate at exterior apical angle, apices feebly sinuate and dehiscent at suture, sutural angles evident; ♀ margins more sinuate, apices more dehiscent at suture and sutural angles somewhat produced; depressions not deep, apices finely serrate; under surface dark brown, last segment and middle and posterior femora rufous, tibiæ and tarsi testaceous; anterior tibiæ cylindrical at basal third, then rather suddenly broadened on inner margin in ♂, on outer in ♀, and continuing nearly parallel to apex; apex truncate, exterior apical angle obtuse, rounded; femora with a moderate tooth, setigerous punctures (8 ♂, 9 ♀) deep and closely placed. Length 11-11.5 mm.; breadth 6-6.5 mm.

Hab.—Texas.

Dr. Regimbart compares this species with *emarginatus* and "*americanus*" (*assimilis?*), but to me it seems more closely related to *serrulatus*. It is, however, not so strongly convex as that species, the surface is bronzed, not polished black, the apices of elytra are sinuate and dehiscent at suture, while this is not the case with *serrulatus;* the femoral tooth is weaker, the punctures not so numerous, and the serration of the elytra is finer. Dr. Regimbart overlooked this serration, and, while I have not seen his types, his description leaves no doubt as to the determination of my specimens, of which I have examined over twenty.

D. discolor Aubé. Pls. 5, 6, figs. 11, 11*a* and 11*b*.—Size moderately large, oblong oval, somewhat convex, narrowed in front; surface metallic shining, very rarely black, punctures and striæ quite distinct; lateral margins of elytra at exterior apical angles and apices, sinuate; depressions very feeble, sutural angles weakly produced; under surface and legs testaceous to straw color; anterior tibiæ cylindrical at basal portion and gradually broadened to apex; apex slightly oblique, exterior angle rectangular, produced; femora with a fairly strong triangular tooth, setigerous punctures (6 ♂, 7 ♀) not deep or closely placed. Length 10.5 13 mm.; breadth 6–7 mm.

Hab.—North and Middle Atlantic States; North and South Carolina, Mexico.

It is rather remarkable that the femoral tooth of the male in this species has been so long overlooked. This is probably due to the generally light color of the under surface and legs, and to the habit of the species of *Dineutes* of folding the legs close to the body. Unless the legs are extended the tooth is concealed.

D. angustus Lec. Pls. 5, 6, figs. 12, 12*a* and 12*b*.—Size small, narrowly ovate, strongly convex, narrowed in front; surface black polished, striæ usually entirely obliterated, at most very faint, punctures evident; lateral margins not sinuate, depressions at suture wanting, at exterior apical angles distinct; sutural angles somewhat produced; entire under surface and legs rufous; anterior tibiæ cylindrical at basal portion and gradually broadened to apex; apex strongly oblique, exterior apical angles acute and sharply produced; femora with a minute tooth, setigerous punctures (4 ♂, 5 ♀) shallow and well separated. Length 9–10.5 mm.; breadth 4.5–5.5 mm.

Hab.—Virginia, Florida.

This species is closely related to *discolor*, but I am convinced it is a distinct species. It is smaller, the largest specimens I have seen being no larger than the smallest *discolor*, is narrowly ovate, not so abruptly narrowed in front and more strongly convex. In *angustus* the surface is polished black, in *discolor* metallic shining; in *angustus* the striæ are usually obliterated, never more than very faint; in *discolor* they are distinct; in *angustus* the lateral margins at exterior apical angles are not sinuate, while in *discolor* they are evidently, though not strongly so. There is one less puncture on the femora in *angustus*, and they are more widely separated. While color is not usually a very reliable character, it is sometimes of importance, and in *discolor* I have never seen the entire under surface and legs of a rufous color, which is constant in *angustus*. The male genitalia are very close, being slightly more slender in *angustus*.

The shape of the labrum in *angustus*, which is more prominent than in any other species in the genus, reminds one strongly of *Gyretes*.

EXPLANATION OF PLATES V & VI.

The numbers refer to the same species throughout: *a*, refers to the apices of elytra; *b*, to the genitalia of ♂.

Fig. 1.—*Dineutes vittatus.*
" 2.— " *sublineatus.*
" 3.— " *emarginatus.*
" 4.— " *carolinus.*
" 5.— " *hornii.*
" 6.— " *nigrior.*
" 7.— " *assimilis.*
" 7 *bis.* " " a little distorted by pressure.
" 8.— " *productus.*
" 9.— " *serrulatus.*
" 10.— " *analis.*
" 11.— " *discolor.*
" 12.— " *angustus.*